

## REMARKS/ARGUMENTS

Claim 1 has been amended to include the limitation of Claim 2. Claims 2 and 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over *Effect of Pretreatment with Green Liquor, AQ and Polysulfide on the Performance of an Extended Batch System* by WIZANI et al., hereinafter WIZANI et al., as evidenced by A combined discrete continuous simulation model of an RDH tank farm by SEZGI et al., hereinafter SEZGI et al. in view of WIPO Publication 99/14423 STIGSSON et al., hereinafter STIGSSON et al. Reconsideration is respectfully requested.

Claim 1, as amended, describes, in part, filling and pressurizing a vessel containing cellulosic material with impregnation liquor collected from a previous batch, said impregnation liquor mixed with, or preceded by an addition of, a volume of fresh polysulfide white liquor, the amount of polysulfide white liquor added corresponding to 25-90% of the total active alkali dosage for the batch, and the polysulfide dosage corresponding to 0.5-5% relative to abs. dry wood; impregnating the cellulosic material with the resulting mixture of impregnation liquor; displacing the impregnation liquor with hot spent cooking liquor; reacting the impregnated cellulosic material with said hot spent liquor; displacing hot spent cooking liquor with a volume of hot white liquor and cooking the cellulosic material with said white liquor to a desired degree of delignification.

As described in the specification, no one had earlier appreciated that, in a batch cooking system, the benefits of using an alkali adjusted fresh polysulfide white liquor, in a batch cooking system also using hot white liquor.

"However, the development of batch cooking systems has caused a major deviation from the conventional cooking technology. White liquor is introduced into the digester as "hot white liquor",

which has been heated up using the heat of the previously generated spent liquor, and steam."

"The hot white liquor temperature in typical displacement batch cooking is 140-180.degree. C. From the displacement batch process point of view, polysulfide has been an impossible chemical.

Thus at the typical process temperature of the hot white liquor, polysulfide white liquor is not stable at all. This fact has disabled the use of polysulfide in the modern displacement kraft pulping processes developed for higher energy and chemical economy and improved pulp quality."

"During the early 80's, new energy efficient kraft batch processes using various liquor displacements emerged. Characteristic for the displacement kraft batch process is to recover hot black liquor from the end of the cooking by displacement and then re-use the energy in the subsequent batches. Partly this is done by using the hot spent cooking liquor as such, and partly by heating the white liquor with the heat of the hot spent liquor leaving the digester system or collected for re-use at low temperature. This process arrangement leads to high temperatures in the input liquor accumulators."

Thus, it was unobvious to those of ordinary skill in the art at the time of this invention to use a separate fresh polysulfide white liquor in the impregnation liquor, together with a later hot white liquor displacement.

WIZANI et al. does not provide this missing piece from the prior art. WIZANI et al. makes repeated references to polysulfide, but there is no reference whatsoever to the polysulfide being provided by fresh polysulfide white liquor. A reader of the WIZANI et al. would only be lead to believe that chemical polysulfide added to warm black liquor would be appropriate. Thus the references do not show Claim 1 to be

obvious, so the allowance and passage to issue of Claim 1, and Claims 3, 5-7, 9-11 that depend thereon, are respectfully requested.

Respectfully submitted,

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